

**Course wise Teaching Plan for Session : Summer 2019****Course : MECHANICS OF MATERIAL****Faculty : pragat.kulat@raisoni.net - PRAGAT SHRIKRISHNA KULAT**

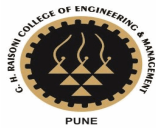
<b>Unit</b>	<b>Topic Code</b>	<b>Topic Covered</b>	<b>Date</b>	<b>Course</b>	<b>Section</b>
1	1	Concept of simple stresses and strains: Introduction, stress, strain, types of stresses, stress – strain diagram for brittle and ductile material, elastic limit, Hooks law, modulus of elasticity. Modulus of rigidity, factor of safety	03/12/2018	BMEL206	C
1	2	analysis of tapered rod, analysis of composite section, thermal stress and strain, thermal stresses with heat flow in cylinders and plates	04/12/2018	BMEL206	C
1	3	Numericals	05/12/2018	BMEL206	C
1	1	Tension test for given material on Universal Testing Machine.	07/12/2018	BMEL206	C
1	4	Hertz's contact stresses Longitudinal strain and stress, lateral stresses and strains, Poisson's ration	10/12/2018	BMEL206	C
1	5	volumetric stresses and strain with uni-axial, bi-axial and tri-axial loading, bulk modulus, relation between Young's modulus and modulus or rigidity, Poisson's ratio and bulk modulus.	11/12/2018	BMEL206	C
1	6	Definition of principal planes and principal stresses, analytical method of determining stresses on oblique section	12/12/2018	BMEL206	C
1	2	Tension test for given material on Universal Testing Machine.	14/12/2018	BMEL206	C
1	7	Mohr's circle for representation of stresses. Derivation of maximum and minimum principal stresses and maximum shear stresses when the member is subjected to combined stress	17/12/2018	BMEL206	C
2	8	Shear force and bending moment: Types of beam (cantilever beam, simply supported beam, overhung beam etc.). Types of loads (Concentrated and UDL), shear force and bending moment diagrams	18/12/2018	BMEL206	C
2	9	Numerical	19/12/2018	BMEL206	C
1	3	Compression test for given material on Universal Testing Machine.	21/12/2018	BMEL206	C

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2	10	Numerical	24/12/2018	BMEL206	C
2	11	Stresses in beams: Pure bending, theory of simple bending with assumptions and expressions for bending stress, derivation of bending equation, bending stresses in symmetrical sections	01/01/2019	BMEL206	C
2	12	Numericals	02/01/2019	BMEL206	C
1	4	Compression test for given material on Universal Testing Machine.	04/01/2019	BMEL206	C
1	5	Shear test of ductile material on Universal Testing Machine	18/01/2019	BMEL206	C
3	19	Relation between slope, deflection and radius curvature Macaulay's method	21/01/2019	BMEL206	C
3	20	Numericals	22/01/2019	BMEL206	C
3	21	Area moment method to determine deflection of beam.	23/01/2019	BMEL206	C
1	6	Shear test of ductile material on Universal Testing Machine	25/01/2019	BMEL206	C
3	22	Numericals	28/01/2019	BMEL206	C
4	23	Torsion of circular shafts: Derivation of torsion equation with the assumptions made int..	29/01/2019	BMEL206	C
4	24	Torsion shear stress induced in the shaft, when it is subjected to torque. Strength and rigidity criteria for design of shaft.	30/01/2019	BMEL206	C
4	7	Experimental verification of torsion formula for circular bar.	01/02/2019	BMEL206	C
4	25	Numericals	04/02/2019	BMEL206	C
4	26	Torque transmitted by solid and hollow circular shaft. Derivation of maximum, minimum principal stresses and maximum shear stress induced in shaft when it is subjected to bending moment, torque and axial load	05/02/2019	BMEL206	C
4	27	Numericals	06/02/2019	BMEL206	C
4	8	Experimental verification of torsion formula for circular bar.	08/02/2019	BMEL206	C

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4	28	Column and Struts: Failure of long and short column, slenderness ration, assumptions made in Euler's column theory, end conditions for column.	11/02/2019	BMEL206	C
4	29	Expression for crippling load for various end conditions if column. Effective length of column, limitations of Euler's formula, Rankine formula, Johnson's parabolic formula.	12/02/2019	BMEL206	C
5	30	Strain energy and impact loading: Introduction	13/02/2019	BMEL206	C
2	9	Assignment 1 Shear force and bending moment diagram	15/02/2019	BMEL206	C
2	10	Assignment 2 Shear and bending stresses	22/02/2019	BMEL206	C
5	31	Definition of strain energy stored in a body when it is subjected to gradually applied load, suddenly applied loads and impact loads.	25/02/2019	BMEL206	C
5	32	Definition of strain energy stored in a body when it is subjected to gradually applied load, suddenly applied loads and impact loads.	26/02/2019	BMEL206	C
5	33	Strain energy stored in bending and torsion. Castigliano's theorem.	27/02/2019	BMEL206	C
1	11	Assignment 3 Principal stresses and strains	01/03/2019	BMEL206	C
5	34	Numericals	05/03/2019	BMEL206	C
6	35	Factor of safety, Statistical methods in determining factor of safety. Theories of failure, modes of failure	06/03/2019	BMEL206	C
6	12	Assignment 4 Theories of failure	08/03/2019	BMEL206	C
6	36	compound stresses, eccentric axial loading, variable stresses in machine parts	18/03/2019	BMEL206	C
6	37	stress concentration and stress raisers, notch sensitivity, stress concentration factor	19/03/2019	BMEL206	C
6	38	Methods for reducing stress concentration. Goodmans criteria, Soderberg criteria, Gerber's criteria	20/03/2019	BMEL206	C



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6	39	Fatigue design for finite and infinite life of the parts subjected to variable loads.	25/03/2019	BMEL206	C
6	40	Numericals	26/03/2019	BMEL206	C
6	41	Numericals	27/03/2019	BMEL206	C
2	14	Numericals	08/12/2019	BMEL206	C
2	15	Numericals	09/12/2019	BMEL206	C
3	16	Deflection of beams: Derivation of differential equation of elastic curve with the assumptions made in it.	14/12/2019	BMEL206	C
3	17	Deflection and slope of cantilever, simply supported, overhung beams subjected to concentrated load UDL	15/12/2019	BMEL206	C
3	18	Numericals	16/12/2019	BMEL206	C